APD Calibration Tracking

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Data Sources

- In-time data
  - No triggering or selection, only record +-15us of data around spill

- Random data
  - No triggering or selection, record ~100X in-time data at random times

- Raw Data
  - Sparsified hits from every channel pass through DAQ system

Data Rates (as of July 2005)

- Driven by cosmic muons, ~250kHz, leading to ~400Hz/channel or 12kHz/module rate
  - 120kB/module/s
  - But 23,808*120kB/s=~3GB/s
- There are 400 hits in 2E6 time slices, so the average occupancy is 8E-4.
- Peak occupancy is probably 1 during EAS, but this should be rare, daily?, and last only 1 slice

Cosmic Data Rates (2006)

- Average hit per muon ~150-200
- 4X lower than previous estimates.
- Increases Calibration Fraction, but not data
- Reduces in-spill data rates
- Reduces buffering requirements
  - Note: Buffering should be ~10s new information from Nathaniel Tagg, 2s is only about 90-95% effective, 10s >99%.

Monitoring Data

- Monitor FEB hit rate on channels
  - Hourly
- Monitor FEB pulseheight
  - Every couple of days
- Happens in farm?
- Hit rates 50-150Hz/cell.
- Background rates
  - Reject 99.9% of data, keep random 0.1%
  - Use to map response, monthly average

Buffering Requirements

- Asynchronous spill trigger requires only 1-2 seconds of buffering

- 10s is much better